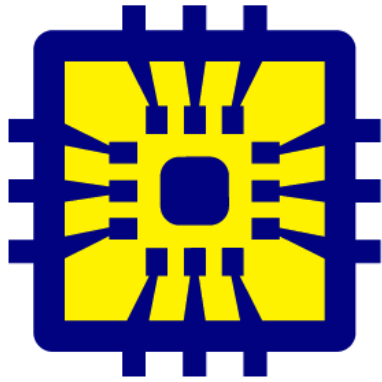


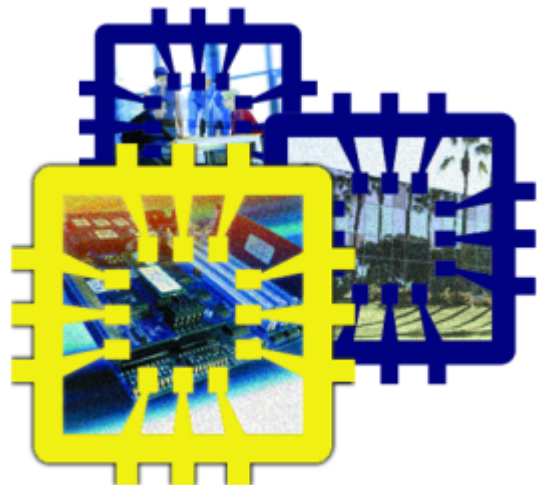


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intelligent security solutions

ASA-72 Hardware Manual

Revision Date: 26 AUG 2006

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ASA-72 Hardware Manual

Advanced Electronic Controller For Apollo Access Control Systems

by Apollo Security Inc.

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IMPORTANT INFORMATION



WARNING

HIGH VOLTAGE, AC MAIN POWER SHOULD ONLY BE CONNECTED BY QUALIFIED, LICENSED ELECTRICIANS. ALL APPLICABLE LAWS AND CODES MUST BE FOLLOWED. IF THIS PRECAUTION IS NOT OBSERVED, PERSONAL INJURY OR DEATH COULD OCCUR

Power should not be applied to the system until after the installation has been completed. If this precaution is not observed, personal injury or death could occur, and the equipment could be damaged beyond repair.

- Verify that the external circuit breaker which supplies power to the device power supply is turned off prior to installation.
- Verify that the output voltage of the power supply is within specifications prior to connection to the device.

CAUTION

Several important procedures should be followed to prevent electro-static discharge (ESD) damage to sensitive CMOS integrated circuits and modules.

- All transport of electronic components, including completed reader assemblies, should be in static shield packaging and containers.
- Handle all ESD sensitive components at an approved static controlled work station. These work stations consist of a desk mat, floor mat and a ESD wrist strap. Work stations are available from various vendors including the 3M company.



FCC Compliance Statement

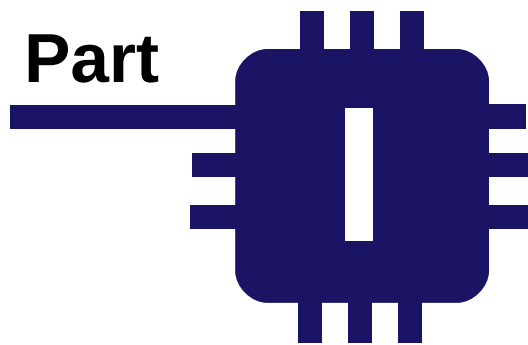
This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

- 1.This device may not cause harmful interference, and
- 2.This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the equipment.

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Introduction



1 Introduction

An access control system provides a means to replace traditional key and lock systems, which are easy to defeat because of the ease of copying of keys and use by unauthorized personnel. With electronic access control, the exact areas a person is able to access as well as during what time is configurable through a central control system. In addition to the power of greater control, a historical record is maintained which is useful in the case of a system security breach or for other purposes including calculating work time and facility use costing.

1.1 Overview

The status panel provides alarm status monitoring for up to 72 alarm zones. The ASA-72 contains an on board processor and a serial link (RS-485) for host communication.

The ASA-72 monitors and displays alarm, trouble, and non-alarm status. It may also be configured to display access control status and configuration information such as access granted, access denied, duress, on-line, off-line, tamper, held-open, forced-open and auxiliary alarm.

The ASA-72 contains an audible alarm and provides front-panel switches for alarm acknowledgement (ACK) and for LED test (TEST).

The ASA-72 processor is enclosed in a secure cabinet with an integral +5 Vdc power supply. The power supply input selections are:

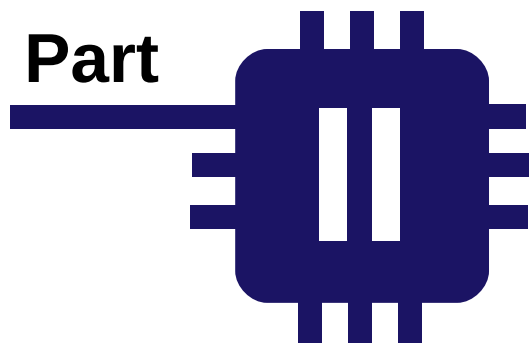
115 Vac (ASA-72, P/N 420-600)

230 Vac (ASA-72I, P/N 420-601)

24 Vdc (ASA-72D, P/N 420-602)

1.2 General Features

- 72 Tri-color LEDs
- Monitors alarms, troubles, non-alarm, duress
- Local acknowledgement
- Local reset/LED test
- Audible output upon new alarm or trouble
- Supports 72 zones (4 sixteen zone alarm input modules and reader alarms)
- RS-485 serial communications
- Host on-line LED
- On-line communication LED for each alarm input module (4 total)
- Monitors cabinet tamper
- Monitors device power fail.



Hardware Layout



2 Hardware Layout

2.1 DIP Switches

The ASA-72 has one block of DIP switches, with 8 switches. These switches are used to set various configuration options for the interface. It is recommended to power the board down before making any changes in the DIP switch settings as any changes will not take effect unless the power is cycled.

2.1.1 DIP Switch Tables

Communications Address (SW1)					
5	4	3	2	1	
OFF	OFF	OFF	OFF	OFF	0
OFF	OFF	OFF	OFF	ON	1
OFF	OFF	OFF	ON	OFF	2
OFF	OFF	OFF	ON	ON	3
OFF	OFF	ON	OFF	OFF	4
OFF	OFF	ON	OFF	ON	5
OFF	OFF	ON	ON	OFF	6
OFF	OFF	ON	ON	ON	7
OFF	ON	OFF	OFF	OFF	8
OFF	ON	OFF	OFF	ON	9
OFF	ON	OFF	ON	OFF	10
OFF	ON	OFF	ON	ON	11
OFF	ON	ON	OFF	OFF	12
OFF	ON	ON	OFF	ON	13
OFF	ON	ON	ON	OFF	14

OFF	ON	ON	ON	ON	15
ON	OFF	OFF	OFF	OFF	16
ON	OFF	OFF	OFF	ON	17
ON	OFF	OFF	ON	OFF	18
ON	OFF	OFF	ON	ON	19
ON	OFF	ON	OFF	OFF	20
ON	OFF	ON	OFF	ON	21
ON	OFF	ON	ON	OFF	22
ON	OFF	ON	ON	ON	23
ON	ON	OFF	OFF	OFF	24
ON	ON	OFF	OFF	ON	25
ON	ON	OFF	ON	OFF	26
ON	ON	OFF	ON	ON	27
ON	ON	ON	OFF	OFF	28
ON	ON	ON	OFF	ON	29
ON	ON	ON	ON	OFF	30
ON	ON	ON	ON	ON	31

Baud Rate		
	2	3
300	OFF	OFF
1200	OFF	ON
2400	ON	OFF
9600	ON	ON

Note: Switch 8 is not used.

Table 2. 1: ASA-72 DIP Switch Settings

2.1.2 DIP Switch Function

Communications Address—Sets the address that identifies the device on the communications line. This number must be unique for each device on a single RS-485 communications line.

Baud Rate—Specifies the baud rate for the serial line of interface. This setting must be the same for all devices on the communication line connected to this port.

Table 2.1.1 : DIP Switch Function

2.2 LEDs

The ASA-72 has 77 LEDs on the front panel for use in monitoring functioning of panel, annunciating alarms and for diagnosis of problems. The LEDs function in two modes: startup and normal operation

2.2.1 Start Up Mode

Immediately after powering on the panel, the start-up test will initiate and the results will be displayed on the LEDs. If there are no failures, the test will progress. If the panel encounters an error, it will stop with the failed test and display the LED sequence corresponding to that test. The first sequence tests the internal logic:

Test	A1	A2	A3	A4
Initialization	ON	OFF	OFF	OFF
Internal RAM	ON	ON	OFF	OFF
External RAM	ON	ON	ON	OFF
PROM CRC Check	ON	ON	ON	ON

Table 2. 2: AIM-2SL Start up LED Function

After the logic test, the LED test will test all LEDs for proper operation:

1. All LEDs ON Green, .5 second (Including ON LINE LEDs)
2. All LEDs ON Orange, .5 second
3. All LEDs ON Red, .5 second
4. Buzzer ON for .5 second and HOST LED ON for 1 second.

2.2.2 Normal Operation

After initialization and self tests, the LEDs will switch to normal operation and will display information about the panel operation.

A single tri-color LED per zone indicates Red for Alarm, Orange for Trouble, and Green for Non-alarm. The LEDs are organized as 4 columns (A,B,C,D,) of 19 each. The LEDs of rows 1-18 are tri-color to display alarm/reader status. LEDs of row 19 (ONLINE) are Green, and show general panel status. Name plate inserts are provided adjacent to each LED column for user defined text to describe LED function (See Figure 61).

2.2.3 Host LED

The Green HOST LED indicates the status of communication between the ASA-72 and host (see Figure 55). The HOST LED functions in two modes: NORMAL mode and TEST mode.

In NORMAL mode, the LED has four states. The four states and the LED activity are shown below:

State	LED Activity
Communication Normal	Solid Green
Comm Lost (Request For Acknowledgement generated)	Slow Blink (1 per sec)
Comm Lost (Being acknowledged)	Fast Blink (5 per sec)
Comm Lost (Acknowledged)	Heart beat (1 per 5 sec)

In TEST mode, the LED shows the communication activity. TEST mode is entered by depressing and holding down the TEST push button. When the TEST button is detected as depressed, the HOST LED will turn on for 1 second to fulfill the LED test function, then, the HOST LED will follow the host communication activity. TEST mode is exited when the test button is released.

2.3 Firmware

PROM Label Information

The PROM that contains the program is labeled with information to identify the program and the product with which it operates. The following is a sample of a typical PROM label and a description of the various fields within the label.

ASA-72
101079-04/B
COPYRIGHT 1994
APOLLO: B8FD

ASA-72—This is the product that this program intended to be used in.

101079-04-B—This is the part number of the PROM. The field after the second dash is the revision of this version of program. This field will change if the program is updated.

COPYRIGHT 1995—The year of the program copyright.

APOLLO: B8FD—The 4 characters after the colon is the program checksum. This number uniquely identifies each different program.

PROM Installation

Remove the old PROM from location U7 (see Figure 101) by prying it out of its socket with a blunt object such as a flat blade screwdriver or with a PROM removal tool. Use care to not damage the circuit board or surrounding components. Do not damage the old PROM, it can be erased and re-used, and should be returned.

The new PROM can now be installed in its socket. Please note the direction of the notch on Figure 56. The new chip must be installed with the notch in this position. Failure to install the chip with the correct orientation will result in destruction of the chip and possible damage to the ASA-72. The new chip may require its pins be bent inward slightly before it will fit into the socket.

Apply power to the ASA-72 and verify correct operation of the program update.

2.4 Additional Installation Information

2.4.1 Mounting

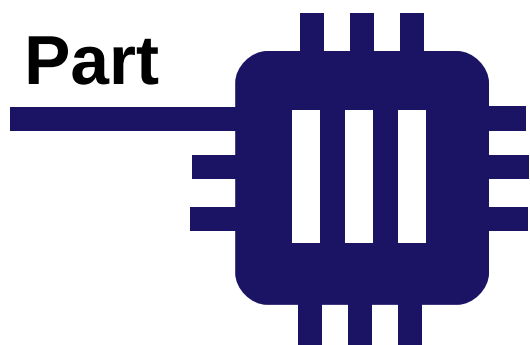
Enclosure Mounting

The ASA-72 enclosure is a steel cabinet which is designed for mounting on a wall. Four mounting holes are provided in the enclosure. See Figure 54 for mounting hole locations.

Power Supply Mounting

Mount the power supply in the cabinet using the #6 hardware provided, as shown in Figure 54. Fasten the supply to the cabinet mounting studs using hex nuts, split lock washers and flat washers.

Connect the green Ground wire to the dedicated ground stud (GND), using a #6 hex nut with an internal star washer between the terminal lug and the cabinet wall.



System Wiring



3 System Wiring

NOTE—Use tie-wraps (supplied) to provide strain relief for all wiring.

3.1 Power

Route the input voltage wiring through any one of the four knockouts provided in the enclosure. Snap-off the protective terminal block cover (where applicable) and connect to the terminal block as shown in Figure 59. Connect the +5V and + RETURN wires to the terminal block and replace the cover.

Connect a UPS as shown in Figure 60.

3.2 RS-485 Communication Line

The ASA-72 is equipped with an RS-485 interface. It communicates with other devices with RS-485 interface in a multi-dropped configuration. The main RS-485 run (4000 feet max.) must use low capacitance shielded cable with 2 twisted pairs having a characteristic impedance of 120 Ohms (Belden 9842 or equivalent). Carefully insulate the shield drain wire (SG) with sleeving for a reliable installation.

Line terminators (ATM-48, P/N 470-030) must be installed at the ends of the communication lines for reliable data transmission.

Route the RS-485 cable into the enclosure through a suitable knockout and connect the RS-485 communication lines as indicated in Figure 58.

3.3 General Alarm Inputs

The ASA-72 provides two general alarm inputs. The wiring to the input should be made with twisted pair 24 AWG wire. If these input is not used, it should be 'jumped' using a 1" (25 mm) long piece of wire connecting the two terminals to form a closed circuit. This will prevent an alarm condition being reported to the host.

3.3.1 Cabinet Tamper

The cabinet tamper switch is pre-wired as shown in Figure 57.

3.3.2 Power Fault Input

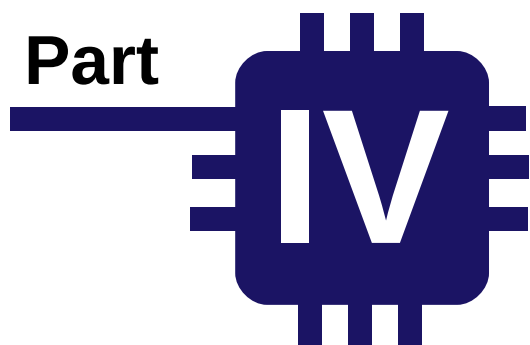
Power fault is sensed when the ASA-72 system is powered from a UPS. Route the wires (24 AWG or larger) through a convenient knockout and terminate them as shown in Figure 57.

3.3.3 Keyswitch/ACK Switch Wiring (Optional)

Two ACK push button wiring options, using a customer-supplied keyswitch, are shown in Figure 62.

The auto-acknowledge wiring option supplies the switch closure from the keyswitch, rather than from the ACK push button, thereby providing a permanent acknowledgement.

The enable/disable option provides secure control of the ACK push button.



Specifications



4 Specifications

Power Requirements:

115 Vac	@	0.2A	for	ASA-72
230 Vac	@	0.1A	for	ASA-72I
24 Vdc	@	0.5A	for	ASA-72D
5 Vdc	@	1.5A	for	ASA Processor

Dimensions:

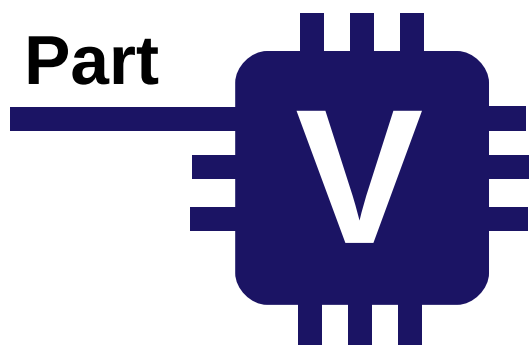
16 in. (width) x 16 in. (Height) x 5 in. (Depth)

Weight (with power supply)—24 lb.

Environment:

Temperature—0-50 degrees C

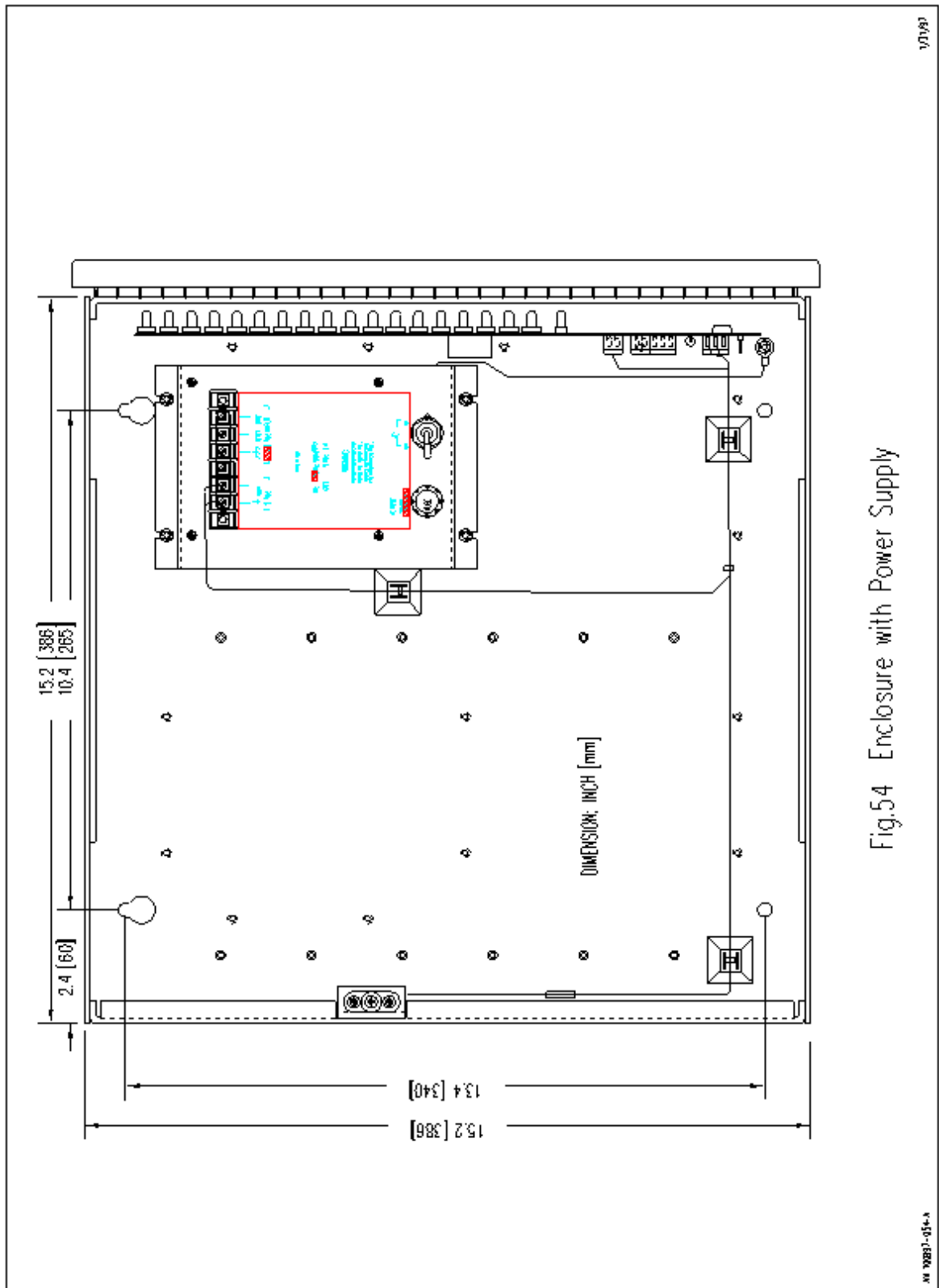
Relative Humidity—0-95% non condensing



Supplemental Figures



5 Supplemental Figures



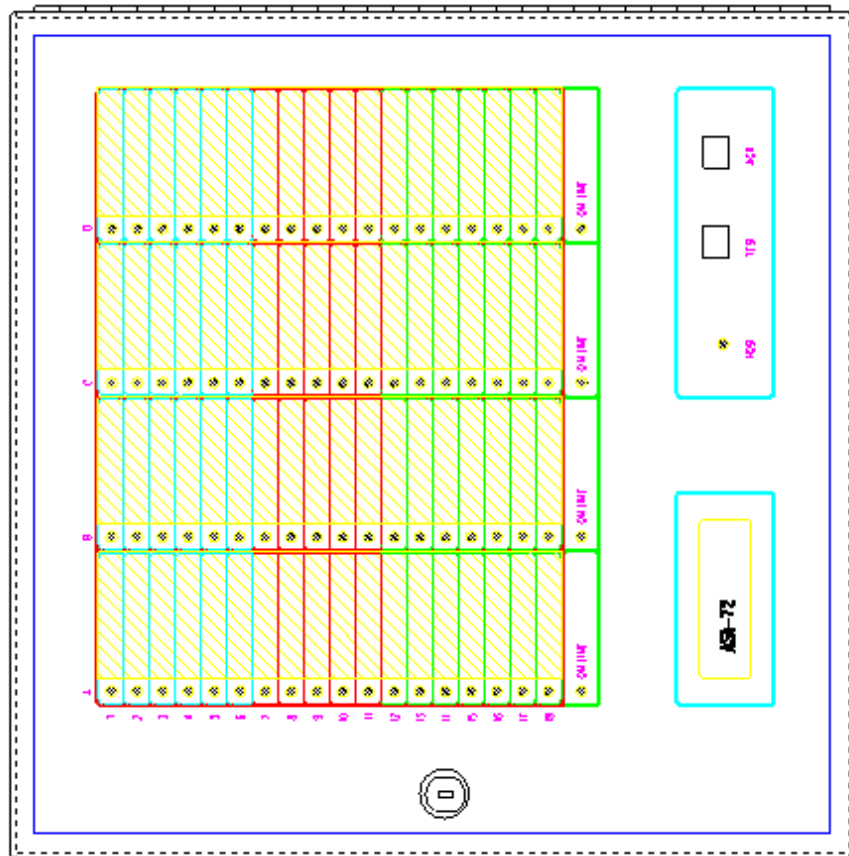


Fig.55 Front View

1/1/83

AM 00851-015-A

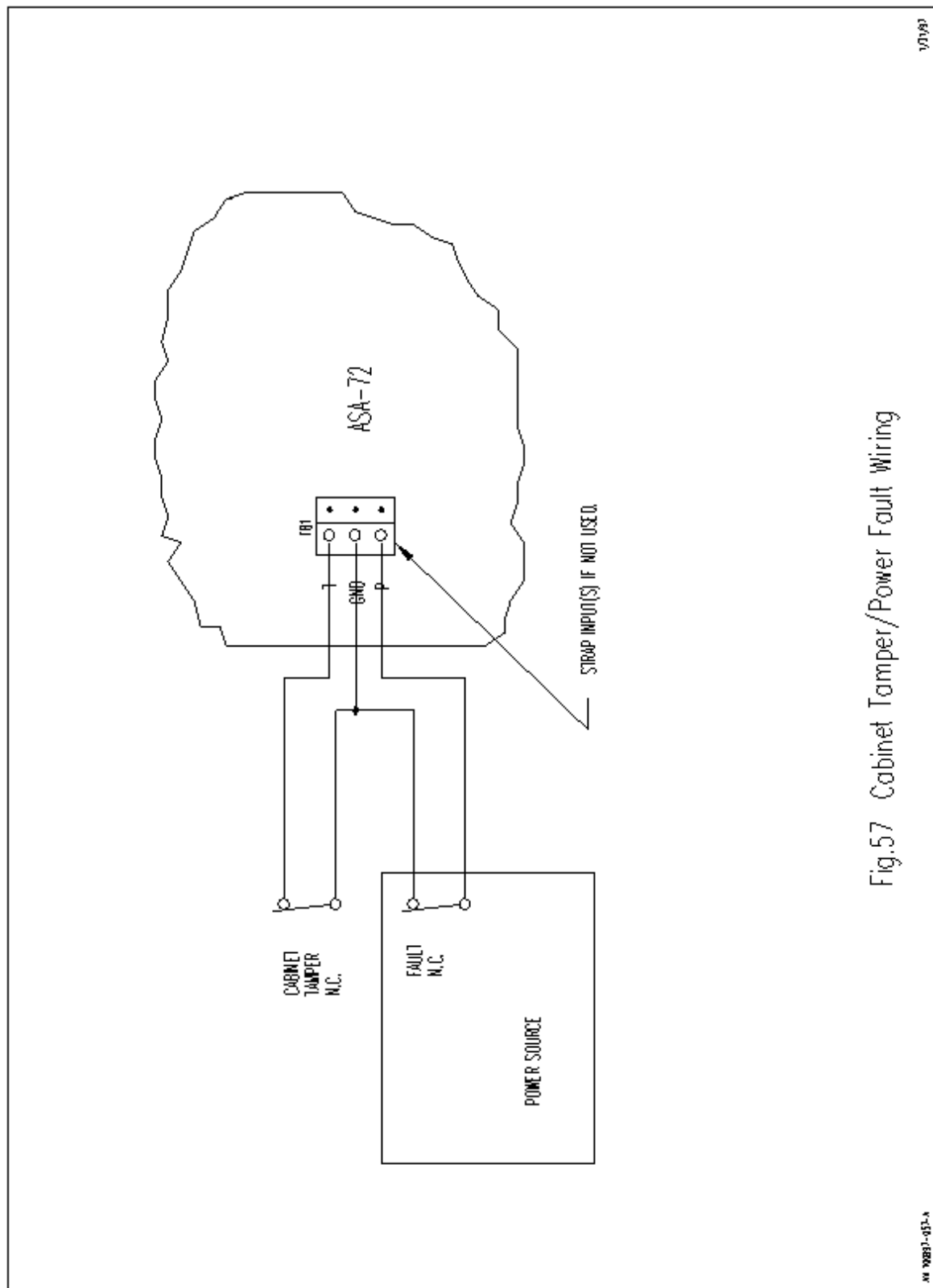
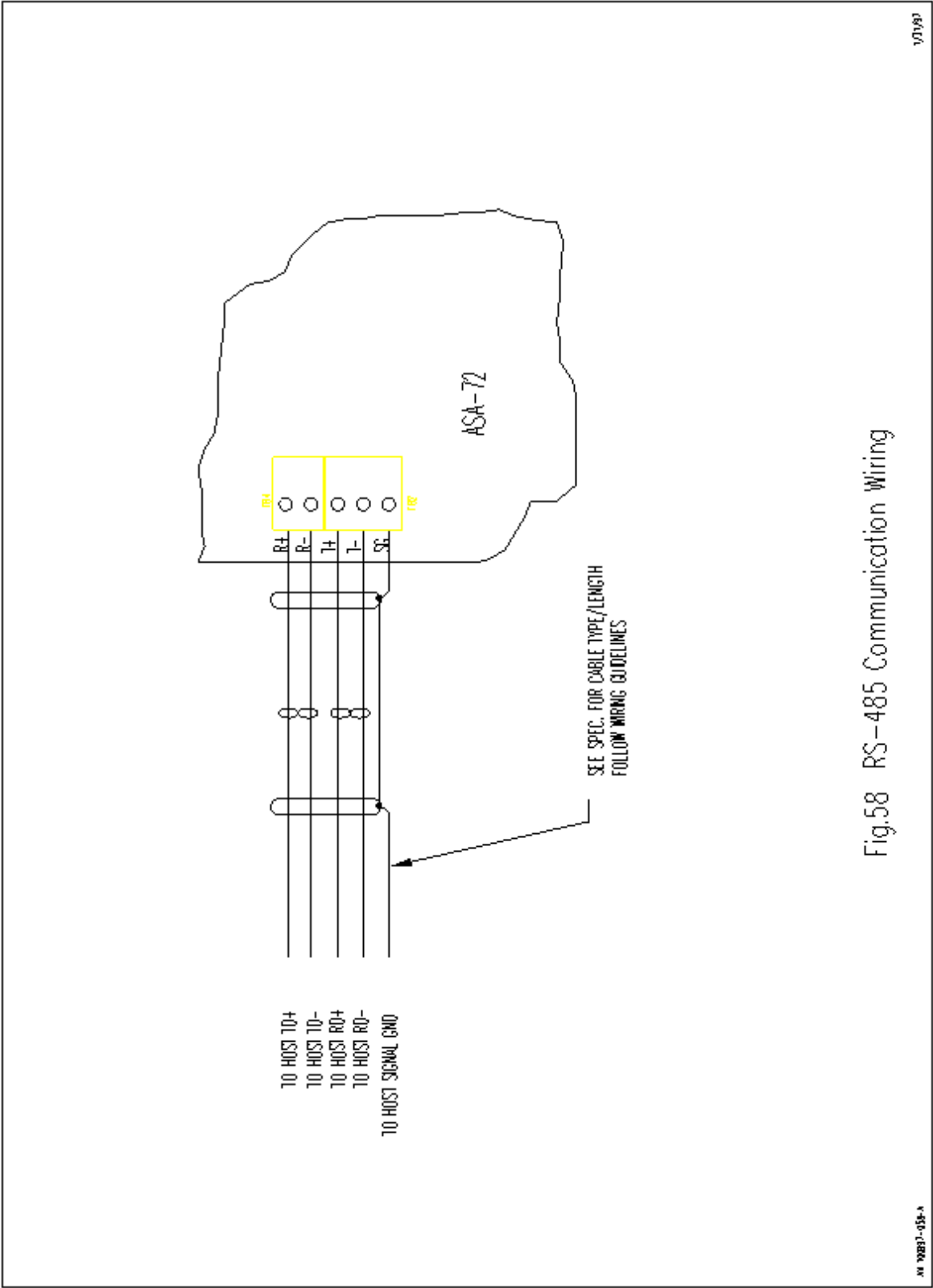
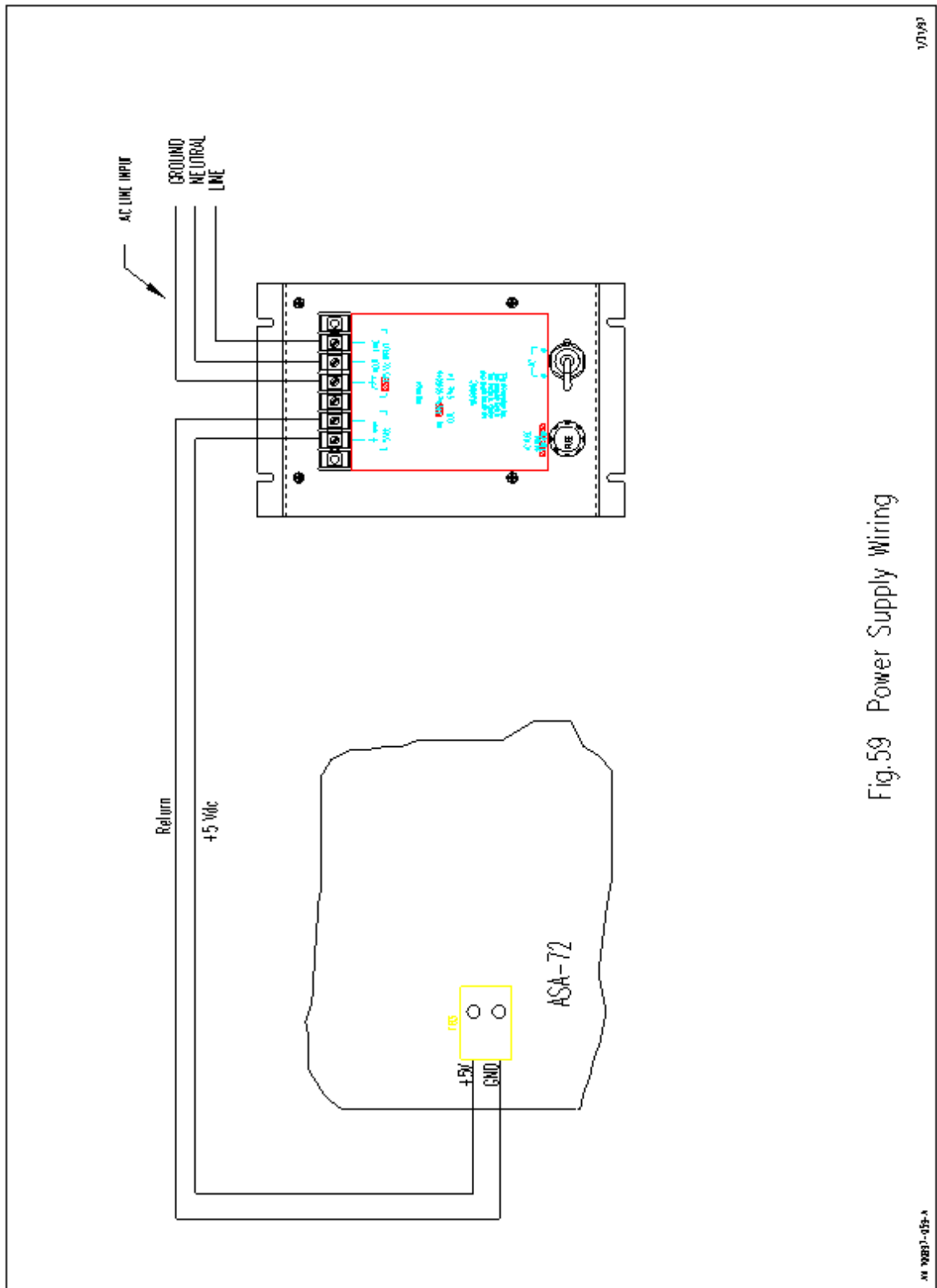
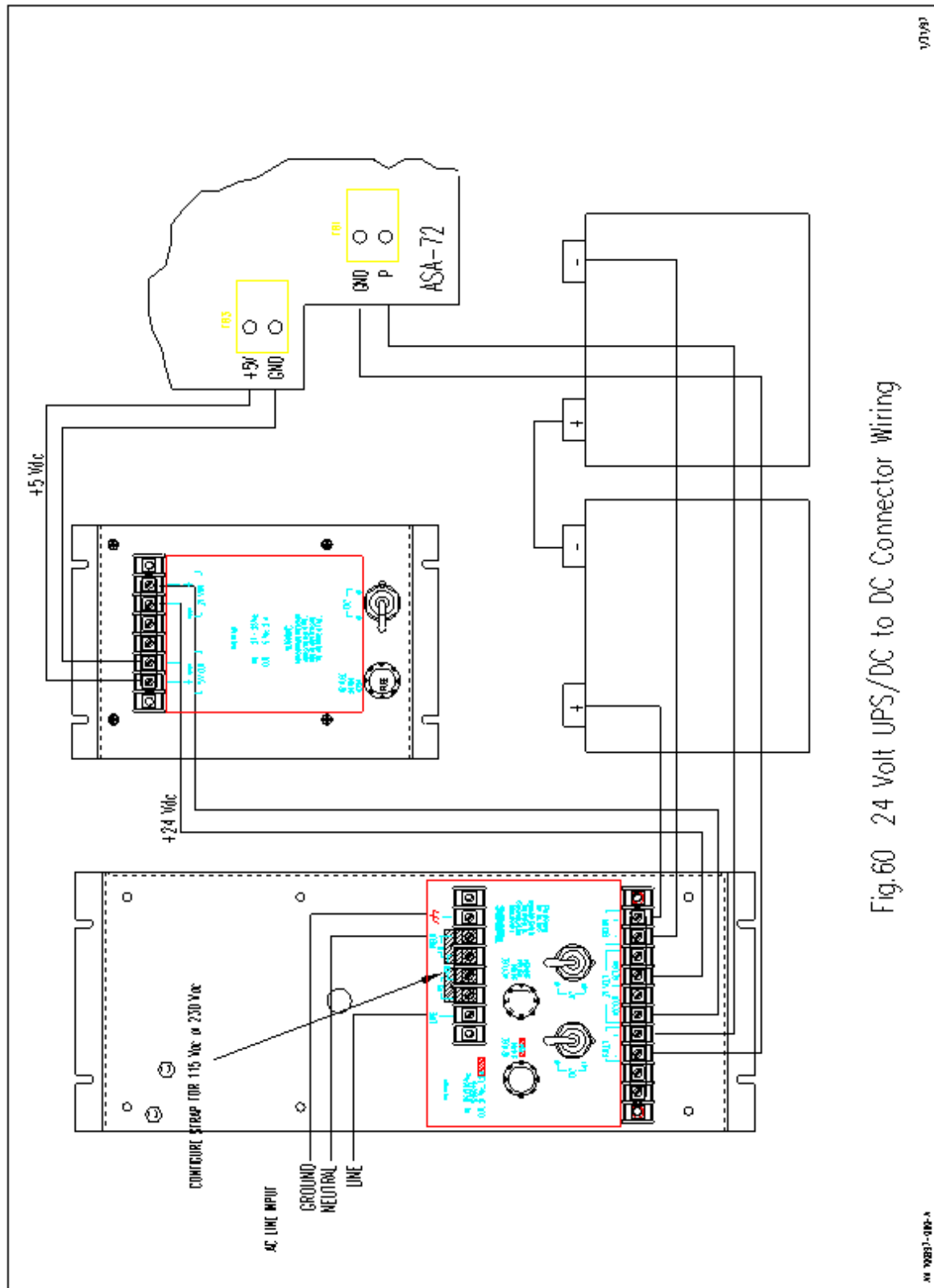


Fig.5.7 Cabinet Tamper/Power Fault Wiring







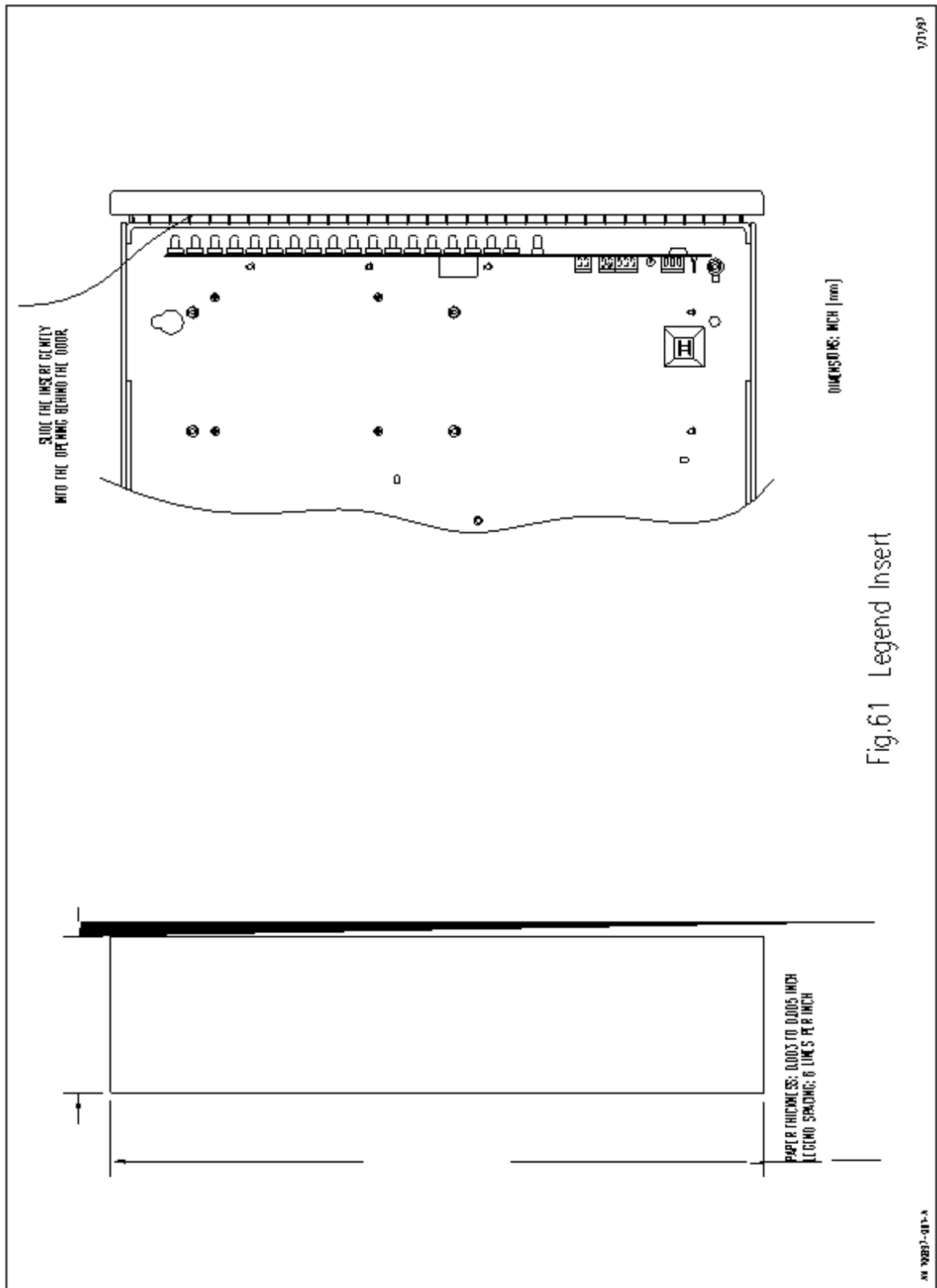


Fig. 6.1 Legend Insert

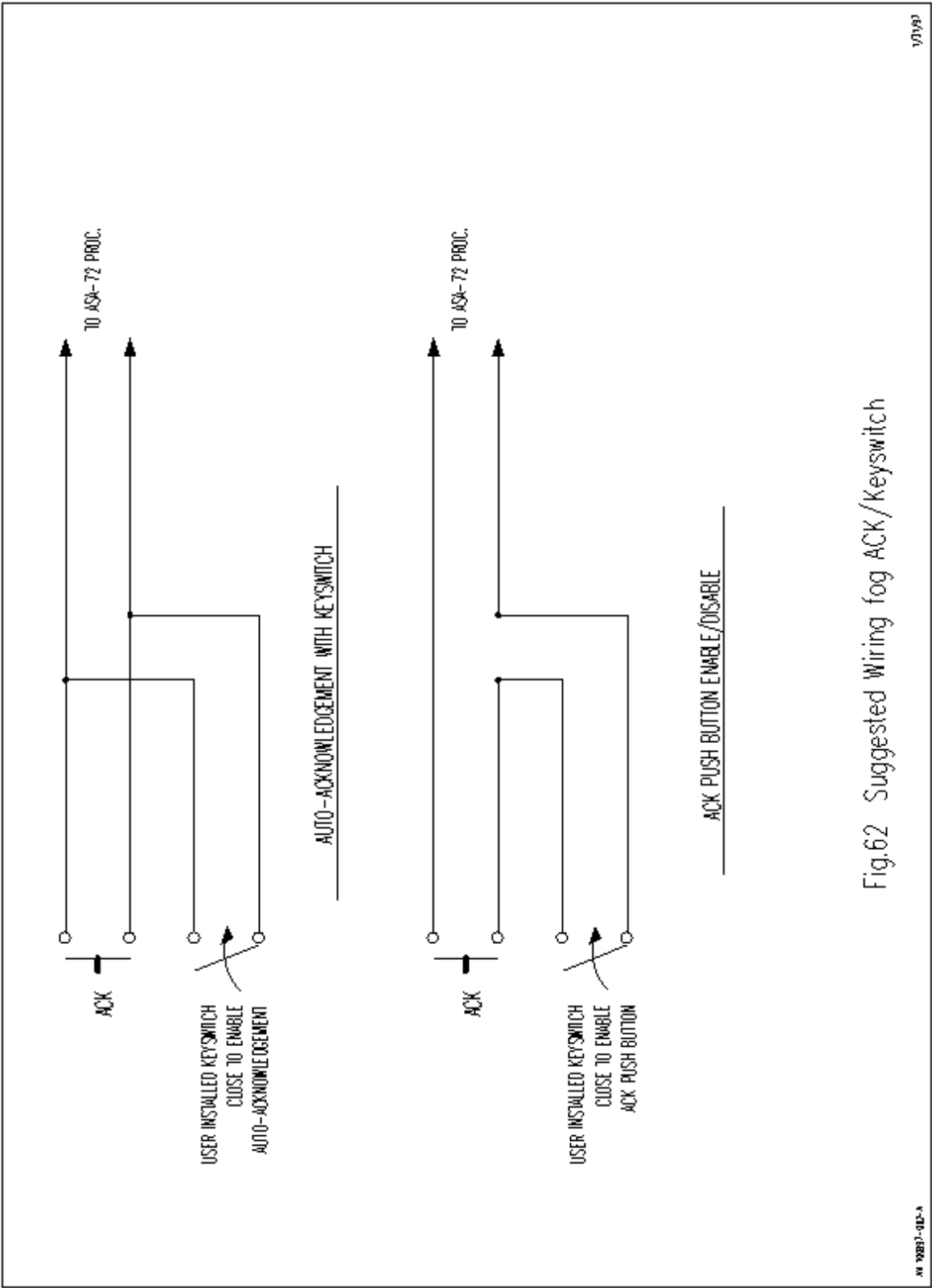
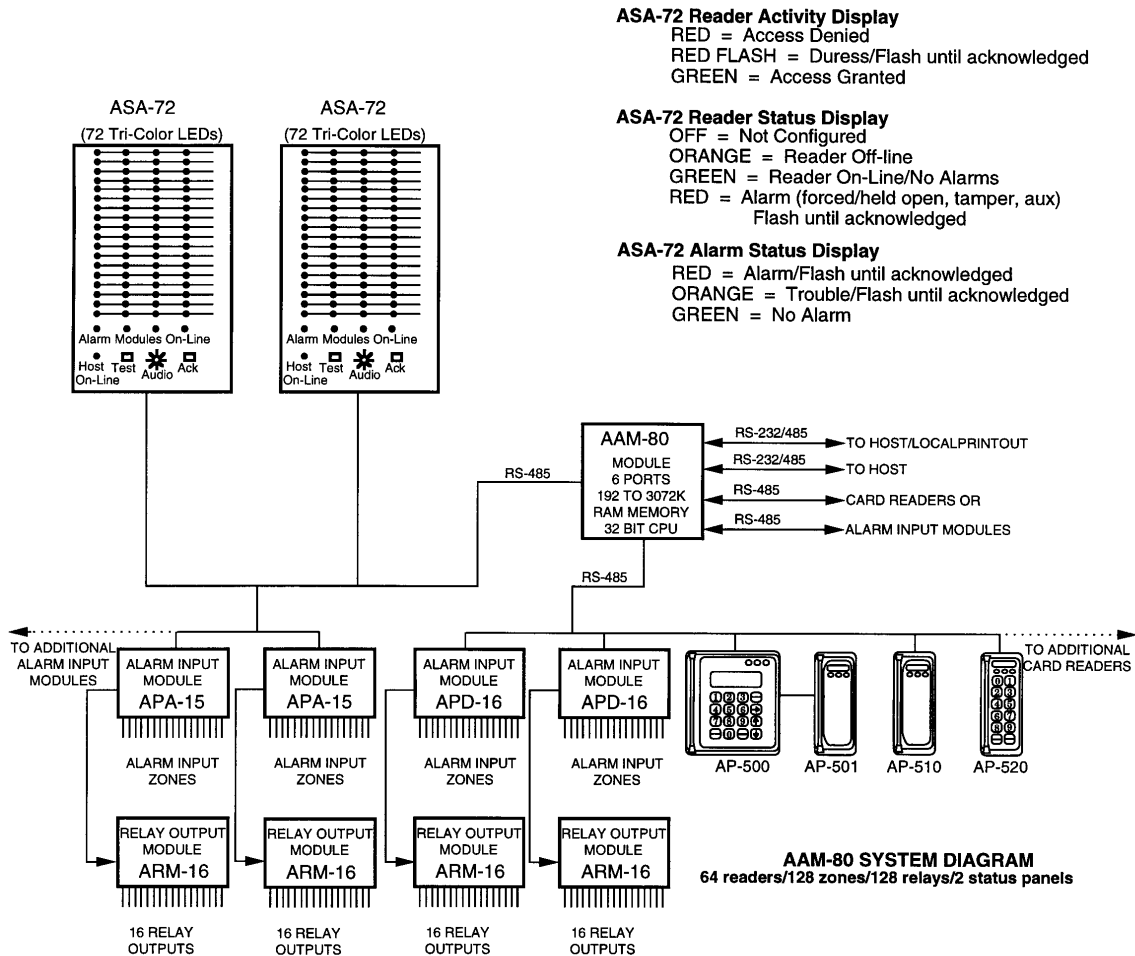


Fig.62 Suggested Wiring for ACK/Keyswitch



Each AAM-80 supports two ASA-72 seventy-two zone alarm status panels, 64 card readers and 128 alarm zones.

RS-485 supports distances to 4000 feet (1200 meters) without modems. The BXN-10 extends this range to 8000 feet (2400 meters).

ASA-72 Features:

- Monitors alarm cabinet tamper and power fail.
- Monitors alarm panel zones.
- Monitors reader alarms (forced/held open, tamper and aux.)
- Monitors reader activity (access granted, access denied or duress).

Dimensions: 16" X 16" X 5" (41 cm X 41 cm X 13 cm)

Figure 63 Typical Application

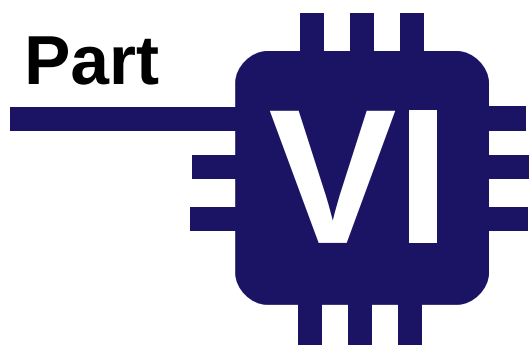
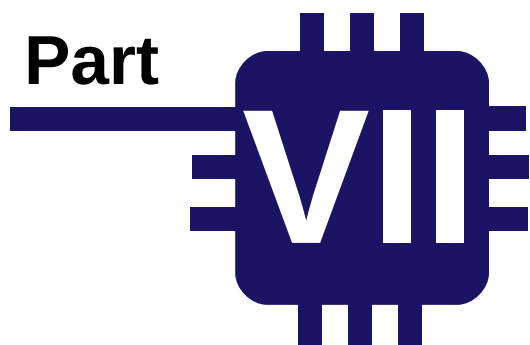


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Revision History

7 Revision History

REVISION HISTORY

Revision	Date	Description of changes	Editor
A	24 OCT 1996	Initial Release	D. Long
B	26 AUG 2006	Rewrite and Accuracy Review	R. Burnside

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